RECYCLED TIRE SEWAGE TREATMENT APPARATUS AND METHOD

CROSS-REFERENCES TO RELATED APPLICATIONS

US PATENT DOCUMENTS

US-2002/0179511	12-2002	WOFFORD	210/151
US-2002/0179510	12-2002	WOFFORD	210/151
US-5,941,238	08-1999	TRACY	126/641
US-4.824,287	04-1989	TRACY	405/36

FOREIGN PATENT DOCUMENTS

2221479	02-1990	TRACY	GREAT BRITAIN

STATEMENT REGARDING FEDERALLY SPONSORED RESEARCH OR DEVELOPMENT

Not Applicable

Reference to a Microfiche Appendix

Not Applicable

BACKGROUND OF THE INVENTION

1. Field of the Invention

This invention relates generally to sewage treatment systems, specifically to a system composed primarily of used vehicle tires.

2. Description of the related art including information disclosed under 37CFR 1.97 and 1.98

Lawrence Tracy disclosed a sewage treatment system in Great Britain patent 2221479 utilizing discarded vehicle tires. Similar systems, termed "chamber" or "infiltrator" units are legally permitted and installed in Virginia and other United States for home construction. These systems, and the invention described herein, differ from the Tracy invention in that neither require a distribution pipe or gravel, as required in the Tracy configuration. Gravel is a major expense, and gravel placement is a major labor requirement in septic systems utilizing gravel. The use of a distribution pipe in the Tracy design requires cutting large holes in

Fig. 3 is a frontal view of a used tire prepared for drainage of treated sewage by addition of an aperture. 12

Fig. 4 is a side view of one example of a completed sewage treatment system primarily of used tires. 13

Fig. 5 is a top view of a plastic plate used to seal a tire except for pipe entry apertures. 14

Fig. 6 is a top view of a plastic plate used to seal a used tire. 15

Fig. 7 is a side view of a septic tank or pump tank unit constructed of used tires and plastic plates. 16

DETAILED DESCRIPTION OF THE INVENTION

To attain the objects as noted above the inventor analyzed established and innovative sewage treatment systems with a view to replacing new manufactured components with waste materials, while identifying the minimum components required for an operational unit. It was found that used vehicle tires could replace new molded plastic chamber components as well as concrete septic tanks with a minimum of modification. The invention is predicated in this finding. 17

More particularly, the present invention features the method of gluing used tires together to instantly construct a tank or chamber for use in sewage treatment. 18

Further, the invention features an apparatus, which comprises a settling tank manufactured from used tires connected by a pipe to a sewage treatment chamber or chambers constructed of used tires. 19

Briefly, according to the invention used tires are glued together with industrial glue to form components of as sewage treatment system. To form a septic tank the section of glued tires is capped with a plastic plate with pipe apertures and a plastic plate without apertures is glued to the bottom of said tank. The section of tires glued together to form a chamber is capped at the anterior end with a glued-on plastic plate with a pipe aperture. The tires are further enhanced by the addition of apertures in the bottom edge of the tires to allow drainage of the treated sewage. 20

Now, preferred embodiments of the invention will be described with reference to the drawings. 21

Fig. 1 is a side view showing an embodiment of the present invention. More specifically, the Figure shows an apparatus, which comprises a used tire A cemented to used tire C with industrial glue B. This is the building block unit of the invention. The process of gluing used tires together is continued as necessary to produce an apparatus of the desired dimensions. 22

This process results in a component, as in Fig. 2, in this illustration many tires glued together to the desired dimension as referenced above. This component in the illustrated horizontal orientation would be utilized as a sewage storage and treatment chamber in the preferred embodiment of the current invention. 23

Fig. 3 is a frontal view of used tire A prepared for drainage of sewage effluent by the cutting of aperture D. The size of aperture D can be adjusted to varying soil conditions, desired wastewater residence times, and other variables. For example, in sandy soils the apertures could be larger as the soil is able to absorb the fluid more rapidly than in clay soils. 24

Fig. 4 is a side view of one example of the preferred embodiment, a completed sewage treatment system composed primarily of used tires. In this example, unit Z, a sedimentation basin resulting from a vertical orientation of the process of repeatedly cementing tires together as described above, receives sewage from pipe X. Pipe X passes through plastic lid E which is glued onto tire A. The sewage is contained within the cemented tires by bottom cap H. The clarified effluent passes through pipe Y up through cover plate E and into the drain field chamber through another plate E with a single pipe aperture. Used tire A is glued to used tire C with industrial glue B , and this process is repeated with successive tires and glue until the desired component dimensions are achieved. Sewage flows from pipe Y, through end plate E, into the horizontally oriented sewage disposal chamber Y1. The treated sewage effluent flows down the length of the chamber Y1 , draining through apertures D into the soil. 25

Now, the plates covering the ends of the chambers are detailed. In figure 5, plastic plate E of sufficient size to cover the original tire hole of the first tire A in Figure 4 is outfitted with holes F and G to allow passage of sewage influent and effluent pipes X and Y in Figure 4. 26

Fig.6 is atop view of plastic plate H in figure 4 which serves to seal the bottom of the sedimentation basin Z in figure 4. Plastic plate H is of sufficient size to cover the end of the last tire of component Z in figure 4 designed to contain wastewater for sufficient time to allow proper sedimentation. This is further illustrated in figure 7 in which the used tire assembly labeled sedimentation basin Z in figure 4 is sealed with impermeable plate H on the bottom and covered with permeable plate E on top as shown in figure 4. Component Z in figure 7 may be considered a generic component for wastewater treatment, and utilized in either a horizontal or vertical orientation and with or without watertight seal plate H or permeable cover E. 27

The specifics contained in the above description should not be construed as limits on the scope of the